

SEQUENCE LISTING

<101> CEA-BINDING PEPTIDE FOR CARCINOEMBRYONIC ANTIGEN (CEA)
<102> Sequence Listing D7X-016.6 US

<111> US 53/541,345
<141> 2000-04-03

<160> 109

<210> 1
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<220>
<221> VARIANT
<222> (1)
<223> Xaa is Asn, Asp or is absent

<220>
<221> VARIANT
<222> (2)
<223> Xaa is Trp

<220>
<221> VARIANT
<222> (3)
<223> Xaa is Asp, Phe or Val

<220>
<221> VARIANT
<222> (5)
<223> Xaa is Asn, Glu or Met

<220>
<221> VARIANT
<222> (6)
<223> Xaa is Asn, Ieu, Met or Phe

<220>
<221> VARIANT
<222> (7)
<223> Xaa is Asp, Gln, Ile, Lys, Phe or Thr

<220>
<221> VARIANT
<222> (8)
<223> Xaa is Ala, Gln, Gly, Lys or Thr

<210> CDR3AAT

<211> PRT

<212> Xaa is Asn, Asp or Glu

<213>

<214> VARIANT

<215> (13)

<216> Xaa is Ser, Leu or Gly

<220>

<221> VARIANT

<222> (11)

<223> Xaa is Ala, Trp or Tyr

<220>

<221> VARIANT

<222> (12)

<223> Xaa is Ala, Gly, His, Phe, Thr or Val

<220>

<221> VARIANT

<222> (14)

<223> Xaa is Asn, Gln, Phe, Ser or Val

<220>

<221> VARIANT

<222> (15)

<223> Xaa is Arg, Leu, Pro or Ser

<220>

<221> VARIANT

<222> (16)

<223> Xaa is Ieu, Ser, Trp or Tyr

<400> 1

Xaa	Xaa	Xaa	Cys	Xaa									
1			5										15

<210> 2

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<221> Description of Artificial Sequence: family of preferred CEA binding moieties

<220>

<221> VARIANT

<222> (1)

<223> Xaa is Asn or Asp

<220>

<221> VARIANT

100. 1
 Xaa-Xaa-Xaa-Xaa, Met, Isoleucine.

<210>
 Xaa-Xaa-Xaa-Xaa
 <211>
 Xaa is Asn, Gly, Ile, Lys, Phe or Thr

<212>
 Xaa is Asn, Gly, Ile, Lys, Phe or Thr
 <213> Xaa is Arg, Asn, Asp, Glu, Gly or Trp

<214>
 Xaa is Asn, Gly, Ile, Lys, Phe or Thr
 <215> Xaa is Arg, Asn, Asp, Glu, Gly or Trp
 <216> Xaa is Asn, Gly, Ile, Lys, Phe or Thr

<217>
 Xaa is Asn, Gly, Ile, Lys, Phe or Thr
 <218> Xaa is Arg, Leu, Pro or Ser

<219>
 Xaa is Asn, Gly, Ile, Lys, Phe or Thr
 <220>
 Xaa is Asn, Gly, Ile, Lys, Phe or Thr
 <221> Xaa is Asn, Gly, Ile, Lys, Phe or Thr
 <222> Xaa is Asn, Gly, Ile, Lys, Phe or Thr
 <223> Xaa is Arg, Leu, Pro or Ser

100. 2
 Xaa-Trp-Tyr-Cys-Glu-Xaa-Xaa-Lys-Xaa-Gln-Trp-Xaa-Cys-Asn-Xaa-Xaa
 1 5 10 15

<210> 3
 <211> 10
 <212> PRT
 <213> Artificial Sequence

<214>
 <215> Description of Artificial Sequence: CEA binding
 loop

<216>
 <217> Xaa is Asn, Gly or Met
 <218>
 <219>

<220>
 <221> Xaa is Asn, Gly or Met
 <222> (3)
 <223> Xaa is Asn, Ile, Met or Phe

<224>
 <225> Xaa is Asn, Gly or Met
 <226> (4)
 <227> Xaa is Asp, Gly, Ile, Lys, Phe or Thr

<210> 1
 <211> VARIANT

<212> Xaa is Arg, Lys, His or Thr

<210> 2
 <211> VARIANT

<212> (6)
 <213> Xaa is Arg, Asn, Asp, Glu or Gly

<210>

<211> VARIANT

<212> (7)

<213> Xaa is Gln, Gly or Leu

<210>

<211> VARIANT

<212> (8)

<213> Xaa is Ala, Trp or Tyr

<210>

<211> VARIANT

<212> (9)

<213> Xaa is Ala, Gly, His, Phe, Thr or Val

<400> 3

Cys	Xaa	Cys							
1									10

<210> 4

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 4

Asn	Trp	Val	Cys	Asn	Leu	Phe	Lys	Asn	Gln	Trp	Phe	Cys	Asn	Ser	Tyr
1															15

<210> 3

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 5

Asp	Trp	Val	Tys	Glu	Asn	Lys	Lys	Asp	Gln	Trp	Thr	Cys	Asn	Leu	Leu
1															15

<210> 1
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 6
Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro Trp
1 5 10 15

<210> 7
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 7
Asp Trp Val Cys Glu Lys Thr Thr Gly Gly Tyr Val Cys Gln Pro Leu
1 5 10 15

<210> 8
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 8
Asn Trp Phe Cys Glu Met Ile Gly Arg Gln Trp Gly Cys Val Pro Ser
1 5 10 15

<210> 9
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 9
Asp Trp Val Cys Asn Phe Asp Gln Gly Leu Ala His Cys Phe Pro Ser
1 5 10 15

<210> 1
<211> 1
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(12)
<223> amino acid positions 4 and 9 are invariant Cys;
all other positions Xaa are varied but not Cys, to
provide a library of 2×10^8 different peptides
based on the template sequence

<400> 10
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
1 5 10

<210> 11
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(11)
<223> amino acid positions 3 and 9 are invariant Cys;
all other positions Xaa are varied but not Cys, to
provide a library of 1×10^9 different peptides
based on the template sequence

<400> 11
Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
1 5 10

<210> 12
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(14)
<223> amino acid positions 3 and 10 are invariant Cys;

all other positions Xaa are varied but not Cys, to provide a library of 2.5 \times 10⁸ different peptides based on the template sequence:

<210> 13
 Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
 10

<211> 13
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)...(16)
<223> amino acid positions 4 and 13 are invariant Cys; all other positions Xaa are varied but not Cys, to provide a library of 2.5x10(8) different peptides based on the template sequence

<400> 13
 Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
 10 15
 5

<210> 14
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: variable sublibrary sequence used in designing focused secondary library

<220>
<221> VARIANT
<222> (1)...(3)
<223> Xaa is any amino acid except Cys

<220>
<221> VARIANT
<222> (5)...(6)
<223> Xaa is any amino acid except Cys

<400> 14
 Xaa Xaa Xaa Cys Xaa Xaa Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu
 10 15
 5

<210> 15

<210>
 <211> PEP
 <212> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: variable
 sublibrary sequence used in designing focused
 secondary library

<220>
 <221> VARIANT
 <222> (6)..(9)
 <223> Xaa is any amino acid except Cys

<400> 15
 Asp Trp Val Cys Xaa Xaa Xaa Xaa Gln Trp Thr Cys Asn Leu Leu
 1 5 10 15

<210> 1c
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: variable
 sublibrary sequence used in designing focused
 secondary library

<220>
 <221> VARIANT
 <222> (8)..(12)
 <223> Xaa is any amino acid except Cys

<400> 16
 Asp Trp Val Cys Glu Asn Lys Xaa Xaa Xaa Xaa Cys Asn Leu Leu
 1 5 10 15

<210> 17
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: variable
 sublibrary sequence used in designing focused
 secondary library

<220>
 <221> VARIANT
 <222> (11)..(12)
 <223> Xaa is any amino acid except Cys

<220>
 <221> VARIANT
 <222> (14)..(15)

<210> 18
Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu

<211> 16
Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Xaa Cys Xaa Xaa Xaa
10 15

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: variable
sublibrary sequence used in designing focused
secondary library

<220>
<221> VARIANT
<222> (6)...(7)
<223> Xaa is any amino acid except Cys

<220>
<221> VARIANT
<222> (9)
<223> Xaa is any amino acid except Cys

<220>
<221> VARIANT
<222> (12)
<223> Xaa is any amino acid except Cys

<220>
<221> VARIANT
<222> (15)
<223> Xaa is any amino acid except Cys

<400> 18
Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu
1 5 10 15

<210> 19
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: variable
sublibrary sequence used in designing focused
secondary library

<220>
<221> VARIANT
<222> (6)...(7)
<223> Xaa is any amino acid except Cys

<210> 22
<211> PRT
<212> Artificial Sequence

<213>
Description of Artificial Sequence: Isolate of
TNU73 library found not to bind CEA

<210> 22
Arg Tyr Cys Glu Phe Phe Pro Trp Ser Leu His Cys Gly Arg Pro
1 5 10 15

<210> 23
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: conserved
amino acid positions in first family of CEA
binding peptides

<220>
<221> VARIANT
<222> (6)
<223> X is Asn, Leu, Met or Phe

<220>
<221> VARIANT
<222> (7)
<223> X is Asp, Gly, Ile, Lys, Phe or Thr

<220>
<221> VARIANT
<222> (9)
<223> X is Arg, Asn, Asp, Glu or Gly

<220>
<221> VARIANT
<222> (12)
<223> X is Ala, Gly, His, Phe, Thr or Val

<220>
<221> VARIANT
<222> (13)
<223> X is Arg, Ieu, Pro or Ser

<210> 23
Asp Itp Val Cys Glu Xaa Xaa Lys Xaa Cln Trp Xaa Cys Asn Xaa Ieu
1 5 10 15

<211> 24

<210> 24

<211> PRT
<212> Artificial Sequence

<213>

<223> Description of Artificial Sequence: synthetic CEA
binding peptide with C-terminal immobilization
sequence.

<400> 24

Ser Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser
1 5 10 15Tyr Ala Pro Gly Gly Glu Gly Gly Ser Lys
20 25

<210> 25

<211> 27

<212> PRT

<213> Artificial Sequence

<400>

<223> Description of Artificial Sequence: synthetic CEA
binding peptide with C-terminal immobilization
sequence

<400> 25

Ser Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu
1 5 10 15Leu Ala Pro Gly Gly Glu Gly Gly Ser Lys
20 25

<210> 26

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic CEA
binding peptide with C-terminal immobilization
sequence

<400> 26

Ser Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro
1 5 10 15Trp Ala Pro Gly Gly Glu Gly Gly Ser Lys
20 25

<210> 27

<211> 27

<212> PRT

<213> Artificial Sequence

The following table shows the results of the first trial. The plant had approximately 1000 flowers at the time of the first measurement. The mean daily increase in flower number was 10.5.

Asp Asp Thr Val Tyr Ile Ile Thr Thr Gly Gly Tyr Val Cys Glu Pro
 16 15
 Lys Lys Ile Gly Gly Glu Gly Gly Ser Lys
 26 25

<210> 28
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: C-terminal
sequence for immobilizing peptides

<400> 28
Ala Pro Gly Gly Glu Gly Gly Ser Lys
1 5 10

<210> 29
<211> 16
<212> PRT
<213> Artificial Sequence

<223> Description of Artificial Sequence: template sequence for sublibrary used in construction of focused secondary display library

<220>
<221> VARIANT
<222> (1)..(3)
<223> X is any amino acid except Cys

<220>
<221> VARIANT
<222> (5...6)
<223> X is any amino acid except Cys

Met Lys Lys Tyr Lys Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu

Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu
 1 5 10 15

<210>
<211>
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template sequence for sublibrary used in construction of focused secondary display library

<220>

<221> VARIANT

<222> (6)..(7)

<223> X is any amino acid except Cys

<220>

<221> VARIANT

<222> (3)

<223> X is any amino acid except Cys

<220>

<221> VARIANT

<222> (12)

<223> X is any amino acid except Cys

<220>

<221> VARIANT

<222> (15)

<223> X is any amino acid except Cys

<400> 33

Asp	Trp	Val	Cys	Glu	Xaa	Xaa	Lys	Xaa	Gln	Trp	Xaa	Cys	Asn	Xaa	Leu
1				5				10						15	

<210> 34
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template sequence for sublibrary used in construction of focused secondary display library

<220>

<221> VARIANT

<222> (15)

<223> X is any amino acid except Cys

<220>

<221> VARIANT

<222> (3)

<220> VARIANT

<221> 1

<223> Xaa is Phe, Leu, Met, Tyr, Ile, Val or Asp

<220> VARIANT

<221> 2

<223> Xaa is Ile, Val or Asp

<220>

<221> VARIANT

<222> (6)

<223> Xaa is Leu, Phe, Tyr, Val, Met, Ile or Asn

<220>

<221> VARIANT

<222> (7)

<223> Xaa is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp or Tyr

<220>

<221> VARIANT

<222> (8)

<223> Xaa is Lys, Phe, Asp, Gly, Leu, Asn or Trp

<220>

<221> VARIANT

<222> (9)

<223> Xaa is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln or Trp

<220>

<221> VARIANT

<222> (10)

<223> Xaa is Gln or Lys

<220>

<221> VARIANT

<222> (12)

<223> Xaa is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp or Tyr

<220>

<221> VARIANT

<222> (14)

<223> Xaa is Asn, Asp, Glu, Pro, Gln or Ser

<220>

<221> VARIANT

<222> (15)

<223> Xaa is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met, Glu, Thr, Lys or Trp

<220>

<221> VARIANT

<222> (16)

<223> Xaa is Leu, Met, Val, Tyr, Ala, Ile, Trp, His,

<400> 34

Asp Trp Lys Tyr Lys Lys Lys Asn Gln Trp Lys Tyr Lys Lys Lys

<400>
<401> PRT
<413> Artificial Sequence

<400>

<413> Description of Artificial Sequence: CEA binding polypeptide

<400>

Asp Trp Met Cys Asn Ieu Phe Lys Asn Gln Trp Phe Cys Asp Leu Met

<400> 35
<401> 16
<402> PRT
<413> Artificial Sequence

<400>

<413> Description of Artificial Sequence: CEA binding polypeptide

<400> 36

Asp Trp Val Cys Asn Ieu Phe Lys Asn Gln Trp Phe Cys Asp Leu Met

<400> 37
<401> 16
<402> PRT
<413> Artificial Sequence

<400>

<413> Description of Artificial Sequence: CEA binding polypeptide

<400> 38

Asp Trp Ile Tyr Asn Ieu Phe Lys Asn Gln Trp Phe Cys Asp Gln Met

<400>
<401> 16
<402> PRT
<413> Artificial Sequence

<400>

<413> Description of Artificial Sequence: CEA binding polypeptide

<411> 41
 <412> Artificial Sequence
 <413> Description of Artificial Sequence: CEA binding polypeptide

<414> 42
 <415> Description of Artificial Sequence: CEA binding polypeptide

<416> 43
 Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gln Val Lys
 1 5 10 15

<417> 44
 <418> 45
 <419> PRT
 <420> Artificial Sequence

<421>
 <422> Description of Artificial Sequence: CEA binding polypeptide

<423> 46
 Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Met
 1 5 10 15

<424> 47
 <425> 48
 <426> PRT
 <427> Artificial Sequence

<428>
 <429> Description of Artificial Sequence: CEA binding polypeptide

<430> 49
 Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Ile
 1 5 10 15

<431> 50
 <432> 51
 <433> PRT
 <434> Artificial Sequence

<435>
 <436> Description of Artificial Sequence: CEA binding polypeptide

<210> 45
<211> Asp Trp Arg Tyr Asn Leu Ile Lys Asn Glu Trp Phe Cys Asp Ala Ile

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 45
Asp Trp Arg Tyr Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ile Arg
1 5 10 15

<210> 46
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 46
Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Val
1 5 10 15

<210> 47
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 47
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ala Ile
1 5 10 15

<210> 48
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 48

<400> 44
Asp Trp Val Cys Asn Leu Lys Asn Gln Trp Phe Cys Asp Val Leu

<210> 44
<211> 16
<212> PRT
<213> Artificial Sequence: CEA binding polypeptide

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 45

Asp Trp Val Cys Glu Phe Leu Lys Met Gln Trp Ala Cys Asn Val Leu
1 5 10 15

<210> 50
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 50

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Val Met
1 5 10 15

<210> 51
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 51

Ala Trp Pro Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Pro Pro Gln
1 5 10 15

<210> 52
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 52

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Leu

<210> 53
<211> PRT
<212> Artificial Sequence

<213>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 53
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Lys Trp
1 5 10 15

<210> 54

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 54
Asp Trp Val Cys Glu Trp Leu Lys Met Gln Trp Ala Cys Asn Met Leu
1 5 10 15

<210> 55

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 55

Asp Trp Val Cys Asp Phe Phe Asn Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 56

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 56

Asp Trp Val Cys Glu Met Phe Lys Ala Gln Trp Phe Cys Asn Ala Leu
1 5 10 15

<210> 57
<211> 16
<212> PRT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: CEA binding polypeptide

<400> 57
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ala Trp
1 5 10 15

<210> 58
<211> 16
<212> PRT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: CEA binding polypeptide

<400> 58
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Trp
1 5 10 15

<210> 59
<211> 16
<212> PRT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: CEA binding polypeptide

<400> 59
Asp Trp Val Cys Glu Tyr Phe Lys Asn Gln Trp Phe Cys Asn Val Leu
1 5 10 15

<210> 60
<211> 16
<212> PRT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: CEA binding polypeptide

<400> 60
Asp Trp Val Cys Glu Ile Asp Lys Gly Gln Trp Thr Cys Asn Pro Leu
1 5 10 15

<210> 61
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 61
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Pro Phe
1 5 10 15

<210> 62
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 62
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Gln
1 5 10 15

<210> 63
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 63
Asp Trp Val Cys Asn Leu Phe Phe Gly Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 64
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 64
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Glu Ala His
1 5 10 15

<210> 65
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 65
Asp Trp Val Cys Glu Ieu Val Lys Ala Gln Trp Tyr Cys Asn Ile Leu
1 5 10 15

<210> 66
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 66
Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Thr Val
1 5 10 15

<210> 67
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 67
Asp Trp Val Cys Glu Phe Tyr Lys Ser Gln Trp Asn Cys Asn Ile Leu
1 5 10 15

<210> 68
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 68
Asp Trp Val Cys Glu Trp Phe Lys Pro Gln Trp Phe Cys Asn Pro Leu
1 5 10 15

<210> 69

<210> 1
 <211> PEP
 <212> Artificial Sequence

<213>
 Description of Artificial Sequence: CEA binding
 polypeptide

<400> 66
 Asp Trp Tyr Cys Asn Ileu Phe Lys Asn Gln Trp Phe Cys Asp Val Leu
 1 5 10 15

<210> 70
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 70
 Asp Trp Val Cys Glu Tyr Asn Asp Glu Gln Trp Thr Cys Asn Leu Leu
 1 5 10 15

<210> 71
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 71
 Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Glu Ala
 1 5 10 15

<210> 72
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 72
 Asp Trp Val Cys Asn Trp Gln Ileu Phe Gln Trp Thr Cys Asn Leu Leu
 1 5 10 15

<210> 73
 <211> 16

<A1> 73
 <A1> Artificial Sequence

<A1> Description of Artificial Sequence: MA-binding
 polypeptide

<A1> 74
 Asp Ile Val Tyr Leu Lys Ile Lys Asn Gln Trp Phe Cys Asp Val Val
 1 5 10 15

<A1> 74
 <A1> 16
 <A1> PRT
 <A1> Artificial Sequence

<A1>
<A1> Description of Artificial Sequence: CEA binding
 polypeptide

<A1> 74
 Asp Ile Val Tyr Asn Leu Ile Lys Asn Gln Trp Phe Cys Asp Val Pro
 1 5 10 15

<A1> 75
 <A1> 16
 <A1> PRT
 <A1> Artificial Sequence

<A1>
<A1> Description of Artificial Sequence: CEA binding
 polypeptide

<A1> 75
 Asp Ile Val Cys Glu Phe Phe Lys Gln Gln Trp Phe Cys Asn Val Leu
 1 5 10 15

<A1> 76
 <A1> 16
 <A1> PRT
 <A1> Artificial Sequence

<A1>
<A1> Description of Artificial Sequence: CEA binding
 polypeptide

<A1> 76
 Asp Ile Val Tyr Glu Ile Phe Lys Asp Gln Trp Ser Cys Asn Val Ile
 1 5 10 15

<A1> 77
 <A1> 16
 <A1> PRT

<4> Artificial Sequence

<5> Description of Artificial Sequence: CEA binding polypeptide

Asp Ile Val Cys Asn Leu Phe Lys Asn Glu Trp Ile Cys Asp Ser Leu
 1 5 10 15

<6> >
 <7> > 76
 <8> > 16
 <9> > PRT
 <10> Artificial Sequence

<11>
 <12> Description of Artificial Sequence: CEA binding polypeptide

Asp Ile Val Cys Asn Leu Phe Met Lys His Gln Trp Phe Cys Asn Pro Leu
 1 5 10 15

<13> >
 <14> > 76
 <15> > 16
 <16> > PRT
 <17> Artificial Sequence

<18>
 <19> Description of Artificial Sequence: CEA binding polypeptide

Asp Ile Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gln Ala Val
 1 5 10 15

<20> >
 <21> > 76
 <22> > 16
 <23> > PRT
 <24> Artificial sequence

<25>
 <26> Description of Artificial Sequence: CEA binding polypeptide

Asp Ile Val Cys Glu Ile Ile Ile Lys Asn Gln Trp Met Cys Asn Val Leu
 1 5 10 15

<27> >
 <28> > 76
 <29> > PRT
 <30> Artificial sequence

<210> 82
<211> 16
<212> PPT
<213> Artificial Sequence

<400> 82
Asp Trp Val Cys Asn Ile Phe Lys Asn Gln Trp Phe Cys Asp Ala Leu
1 5 10 15

<210> 82
<211> 16
<212> PPT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 82
Asp Trp Val Cys Glu Tyr Glu Lys Asp Gln Trp Ser Cys Asn Ile Leu
1 5 10 15

<210> 83
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 83
Asp Trp Val Cys Asn Ile Phe Lys Asn Gln Trp Phe Cys Asp Thr Leu
1 5 10 15

<210> 84
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 84
Asp Trp Tyr Cys Asn Ile Phe Lys Asn Gln Trp Phe Cys Asp Val Tyr
1 5 10 15

<210> 84
<211> 16
<212> PRT
<213> Artificial Sequence

<A11> #1
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11> 35
 <A11> Val Lys Tyr Lys Asn Thr Pro Ile Cys Ser Ile Val
 <A11> 10 15 20 25 30 35

<A11> #2
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11> #3
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11> #6
 Asp Trp Val Cys Gln Phe Phe Lys Lys Gln Trp Phe Cys Asn Ile Leu
 <A11> 10 15 20 25 30 35

<A11> #7
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11> #8
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11> #7
 Asn Trp Val Cys Asp Val Leu Lys Trp Gln Trp Pro Cys Asn Ser Tyr
 <A11> 10 15 20 25 30 35

<A11> #8
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11> #9
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11> #9
 Asp Trp Val Tyr Gln Tyr Asp Lys Gly Gln Trp His Cys Asn Ile Leu
 <A11> 10 15 20 25 30 35

<A11> #10
 <A11> Description of Artificial Sequence: CEA binding
 polypeptide

<A11>

<210> Artificial Sequence: CEA binding polypeptide

<211> 14

Asp Ile Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gln Gln His
1 5 10 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 90

Asp Trp Val Cys Asn Trp Leu Trp Gly Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 91

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 91

Asp Trp Val Cys Glu Met Phe Lys Lys Gln Trp Val Cys Asn Pro Leu
1 5 10 15

<210> 92

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 92

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gly Pro Leu
1 5 10 15

<210> 93

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding

<210> CEA binding polypeptide

<211> Mr. 10,200
 <212> Met. Lys. Asn. Lys. Asp. Lys. Trp. Val. Cys. Thr. Pro. Leu.
 <213> Artificial Sequence

<210>
 <211> 10,200
 <212> PRT
 <213> Artificial Sequence

<210>
 <213> Description of Artificial Sequence: CEA binding polypeptide

<400> 94
 Asp Trp Val Cys Glu Asn Lys Asn Phe Lys Trp Phe Cys Asn Leu Leu
 1 5 10 15

<210> 95
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<210>
 <213> Description of Artificial Sequence: CEA binding polypeptide

<400> 95
 Asp Trp Val Cys Glu Tyr Ala Lys Asn Gln Trp Asn Cys Asn Pro Leu
 1 5 10 15

<210> 96
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<210>
 <213> Description of Artificial Sequence: CEA binding polypeptide

<210> 96
 Asp Trp Val Tyr Asn Leu Phe Lys Asn Gln Trp Phe Cys Glu Trp Ala
 1 5 10 15

<210> 97
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<210>
 <213> Description of Artificial Sequence: CEA binding polypeptide

<210> 100
<211> Asp Ile Tyr Cys Asn Leu Phe Lys Pro Gln Trp Cys Asn Ile Leu
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 98

Asp Ile Tyr Cys Asn Leu Phe Lys Pro Gln Trp Cys Asn Ile Leu Val
1 5 10 15

<210> 99

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 99

Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Glu Met
1 5 10 15

<210> 100

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 100

Asp Trp Val Cys Glu Leu Phe Lys Pro Gln Trp Phe Cys Asn Ile Leu
1 5 10 15

<210> 101

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 102
Asp Trp Val Cys Asp Tyr Lys Phe Phe Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210>
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 102
Asp Trp Val Cys Asp Tyr Lys Phe Phe Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 103
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 103
Asn Trp Val Cys Glu Trp Leu Lys Pro Gln Trp Trp Cys Asn Ser Tyr
1 5 10 15

<210> 104
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 104
Asp Trp Val Cys Glu Phe Phe Lys Pro Gln Trp Met Cys Asn Ile Leu
1 5 10 15

<210>
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 105

<220> Application Number: 09/541,345
Filing Date: 04/23/2001
First Inventor: PETERSON, ROBERT L.

<221> Species:
Human
Strain: IRI
Substrain: Artificial Sequence

<222> Description of Artificial Sequence: CEA binding polypeptide

<411> 156
Asp Trp Val Cys Glu Phe Phe Gly Met Gln Trp Thr Cys Asn Ile Leu
1 5 10 15

<220> 157
<221> 158
Species: IRI
Substrain: Artificial Sequence

<222>
<223> Description of Artificial Sequence: CEA binding polypeptide

<411> 157
Asp Trp Val Cys Glu Tyr Ala Lys Phe Gln Trp Ile Cys Asn Ile Leu
1 5 10 15